

Example Annual Offset of a 600 kW DG Plant Against Central Oil Generation Plant (IDEAL)		
STAGE	LOAD	ANNUAL LOSS (kWh)
DG Generated Power 7800 hrs.	600 kW	
Losses to Step-Up Transformer		0
Gen-Transmission Transformer Total Loss 1.0% CU Loss 0.75%		35,100
Transmission System 30 Miles @ 69kV Ibis 20°C 0.2323Ω/mi		1,370
Substation Transformer Total Loss 1.0% CU Loss 0.75%		35,100
Distribution Circuit 15 Miles @ 12.47 kV Ostrich 20°C 0.3070Ω/mi		27,718
Distribution Transformer 1500 kVA 80°C Rise Total Loss FL (Non-Linear) 9% 50% FL Losses 3% 50% FL CU Losses 2% (Non-Linear)		93,600
TOTAL kWh Losses		192,888
HECO Heat Rate of 10,452 BTU/kW = 32.6% efficient Total kWh required for losses Oil gallons @ 150,600 BTU/GAL Oil Barrels		591,681 <b>13,405 Gals</b> <b>319 barrels of oil</b>

This example represents an idealized circuit using system efficiencies that could be found in a Utility Power System. Age, Older Technology, Corrosion, Splices, Use of Underground Cable, and Transformer secondary cable losses can add to the calculation above and are not included.